

Changing Course: Economic Implications of Lower Mississippi River Avulsion

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Warning...

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**"And should there be a sudden loss
of consciousness during this meeting,
oxygen masks will drop from the ceiling."**

Why consider such things?

- Scope of Knowledge
 - 50 years of infrastructure
 - 200 years of weather records
 - 10000 years of geological records
- How many record events has Louisiana/nation experienced in past 20 years?
 - Hurricanes
 - Water levels
 - Other Disasters
- Disclaimer- do not accept as opinion, but as a starting point for discussion

Importance of Lower Mississippi for Commerce

- Largest Port complex in the Western Hemisphere
- Private and Public facilities
- Jobs multiplier
- Proximity with respect to Panama Canal creates transportation efficiencies for U.S. exports and imports.
 - Current expansion of Panama Canal enhances those efficiencies for all bulk and container traffic.
- Agricultural Trade is an important (but not only) component of lower Mississippi transport.
- River transport via barge helps keep American agriculture competitive in world markets

Important Bulk Commodities, Mississippi River (*italics* are food stuff related)

Inbound

- Crude Oil
- *Fertilizers*
- Chemicals
- Petrochemicals
- Concrete and Stone Products
- Steel Products
- Ores and Phosphate rock
- Coal
- Wood and Wood Chips
- Lignite
- Coke
- *Edible Oils*

Outbound

- *Animal Feeds*
- *Soybeans*
- *Wheat*
- *Maize*
- Coal
- *Milo*
- Lignite
- Petrochemicals
- *Rice*
- *Fertilizers*
- Chemicals
- Crude Oil
- *Edible Oils*

Transportation is driven by

- Economies of scale
 - Growth is geometric by increasing vessel/barge size, not arithmetic
 - Lower per unit costs
- Rates
 - While spot markets exist, most transportation costs are negotiated over the year
- Reliability
 - Shocks and diversions cost money



Reactions to / Preparation for a Lower Mississippi River Avulsion

- Impact on Agricultural and Bulk Transport
- Scenario: Avulsion at Old River Structure
 - Option 1: River shifts to follow the current Atchafalaya, current transportation and manufacturing infrastructure follows.
 - Option 2: River shifts to follow the current Atchafalaya, steps are taken to maintain current Lower Mississippi River as a Slack Water Estuary to allow for and maintain current transport and manufacturing infrastructure.
 - Option 3: River shift to Atchafalaya viewed as temporary; steps are taken to rebuild/maintain Old River Structure.

Response curves



Who will respond-Carriers

Barges

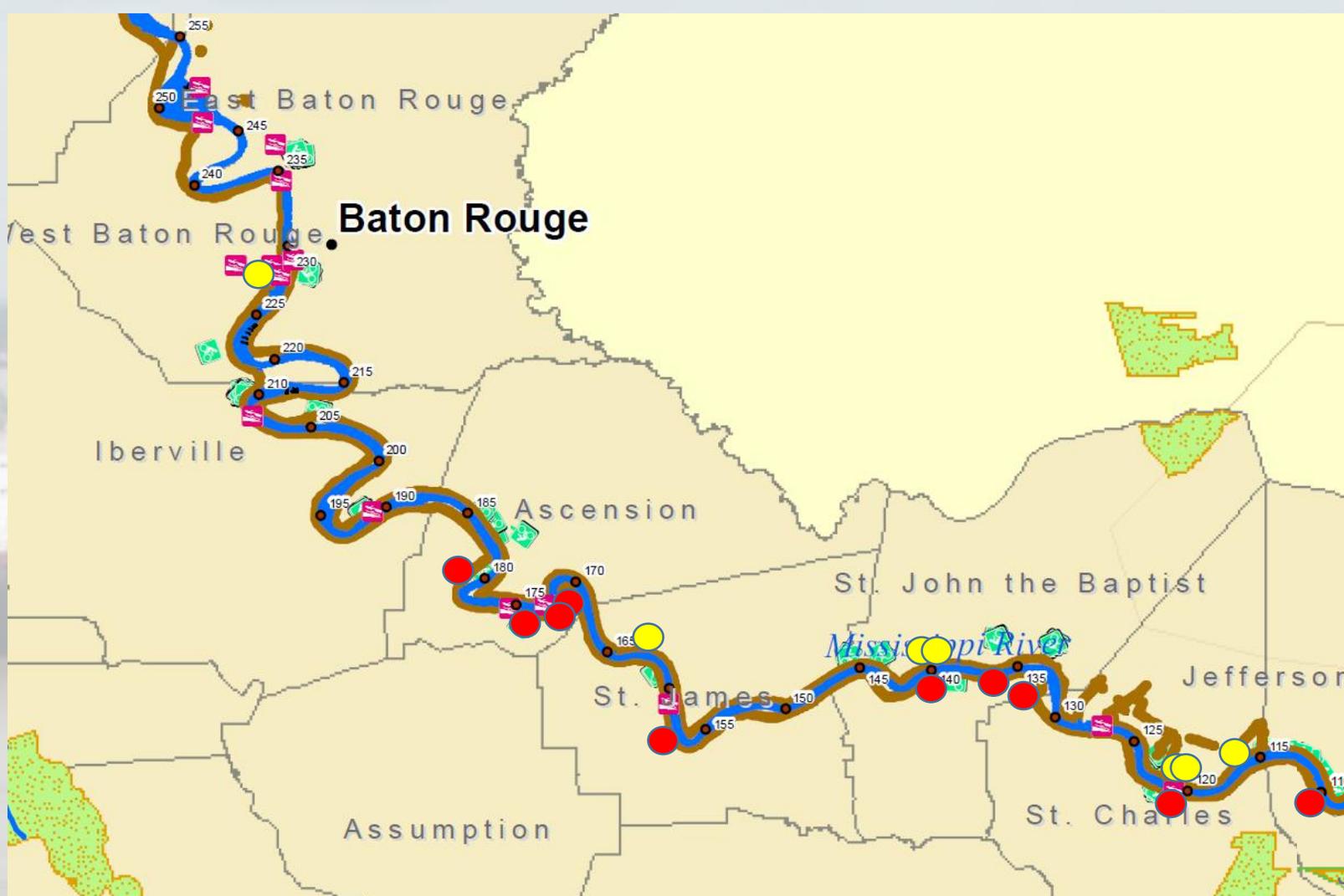
- Largest barge complex in U.S.
- Avulsion may restrict barge fleets unable to go north/south
- Rate changes

Truck

- Rail/Barge switch to truck to satisfy contract deliveries
- Switch to container shipments?
- Drivers? Availability?

Rail

- Rail car availability
- Local terminal access
- Unit Train scale benefits



- Grain Elevators
- Midstream Buoys

Elevation: Baton Rouge – 56’
 Convent – 20’
 Destrehan – 10’

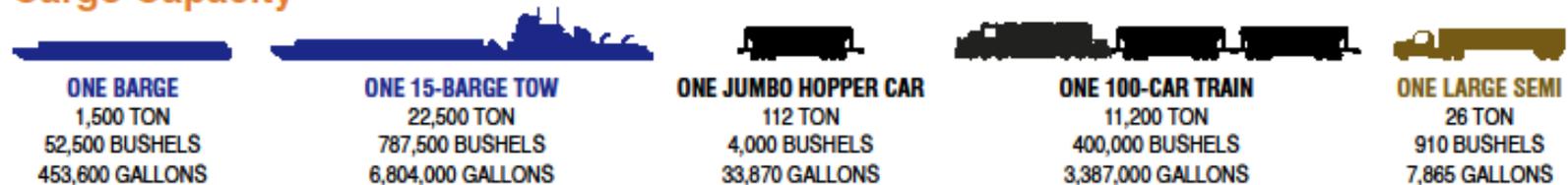


Compare ...

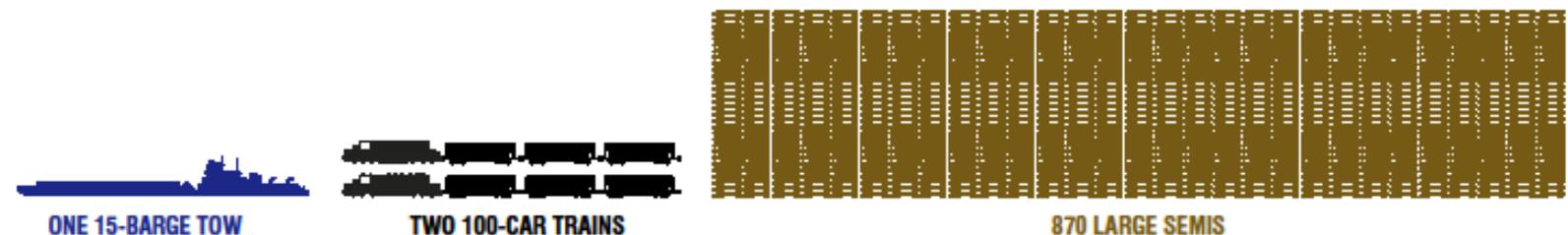
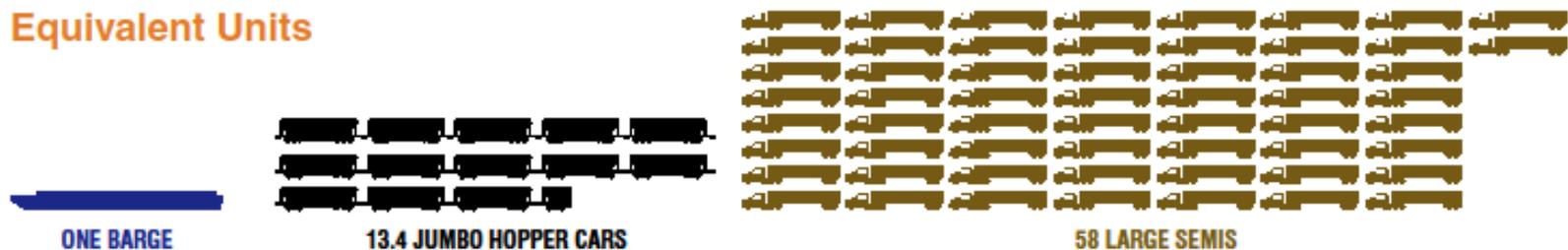


Source: Iowa Department of Transportation - 800 Lincoln Way - Ames, IA 50010 - 515-239-1520

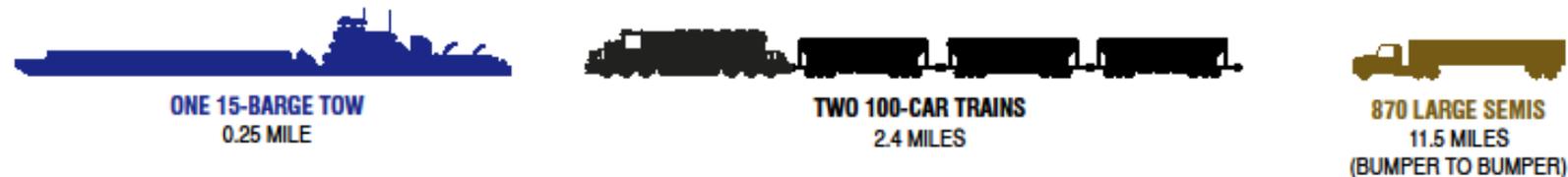
Cargo Capacity



Equivalent Units



Equivalent Lengths



For Soybeans Alone
in 2015...

1,335 Tows

2,628 Unit Trains

1,154,953 Trucks

Who will respond-Shippers

Terminals

- Assets are not mobile
- Need permits to build/restore new facilities
- If go to New River, who can operate on the system?

Overseas Buyers

- Switch to other markets
- Switch to other North American Gateways
- Switch to container shipments?

Domestic Sellers

- Respond to overseas demand
- Switch to wholly US markets
- Implications on higher transportation rates, lower domestic prices
- US Ag. Policy disruptions?

Intermediaries

- Notifications
- Contract satisfaction

Panama Canal Expansion

Implications of the Panama Canal expansion in 2015 are illustrated below.

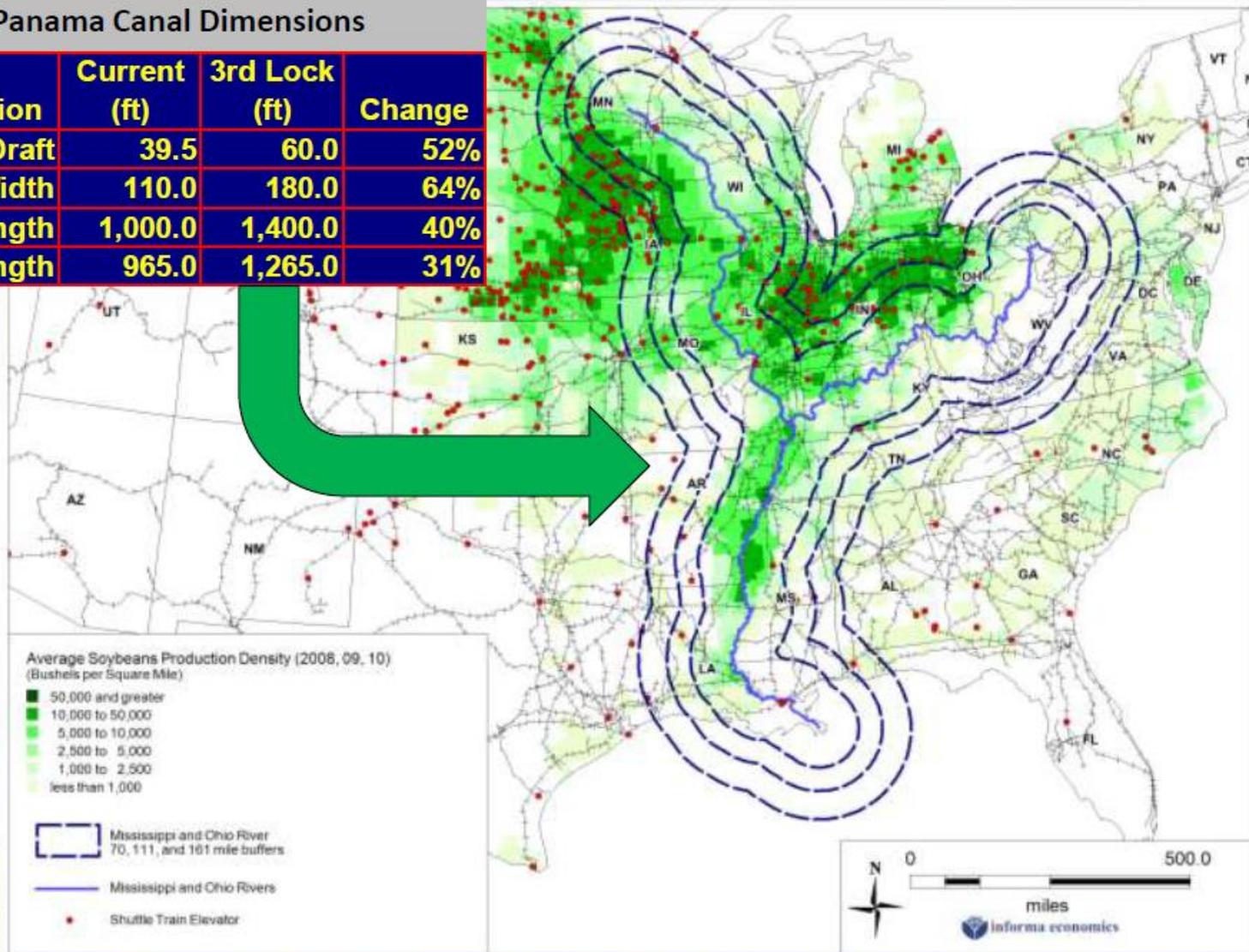
NOTE: Vessel draft limited to 50' in the 3rd set of locks. What will be draft at New Orleans?

Panama Canal Dimensions

Dimension	Current (ft)	3rd Lock (ft)	Change
Draft	39.5	60.0	52%
Width	110.0	180.0	64%
Length	1,000.0	1,400.0	40%
Ship Length	965.0	1,265.0	31%

Soybean Planted Acreage Impact

- 70 miles
◇ 26.7 mil.
- 111 miles
◇ 27.9 mil.
- 161 miles
◇ 49.6 mil.
(two-thirds U.S.)



Who will respond-Other Agents

Coast Guard

- ATONs
- How to ensure navigation safety on a new system?

Corps

- Mobilization of Dredges
- Balancing Navigation vs other uses
- Two channels to manage- funding challenges

State Response

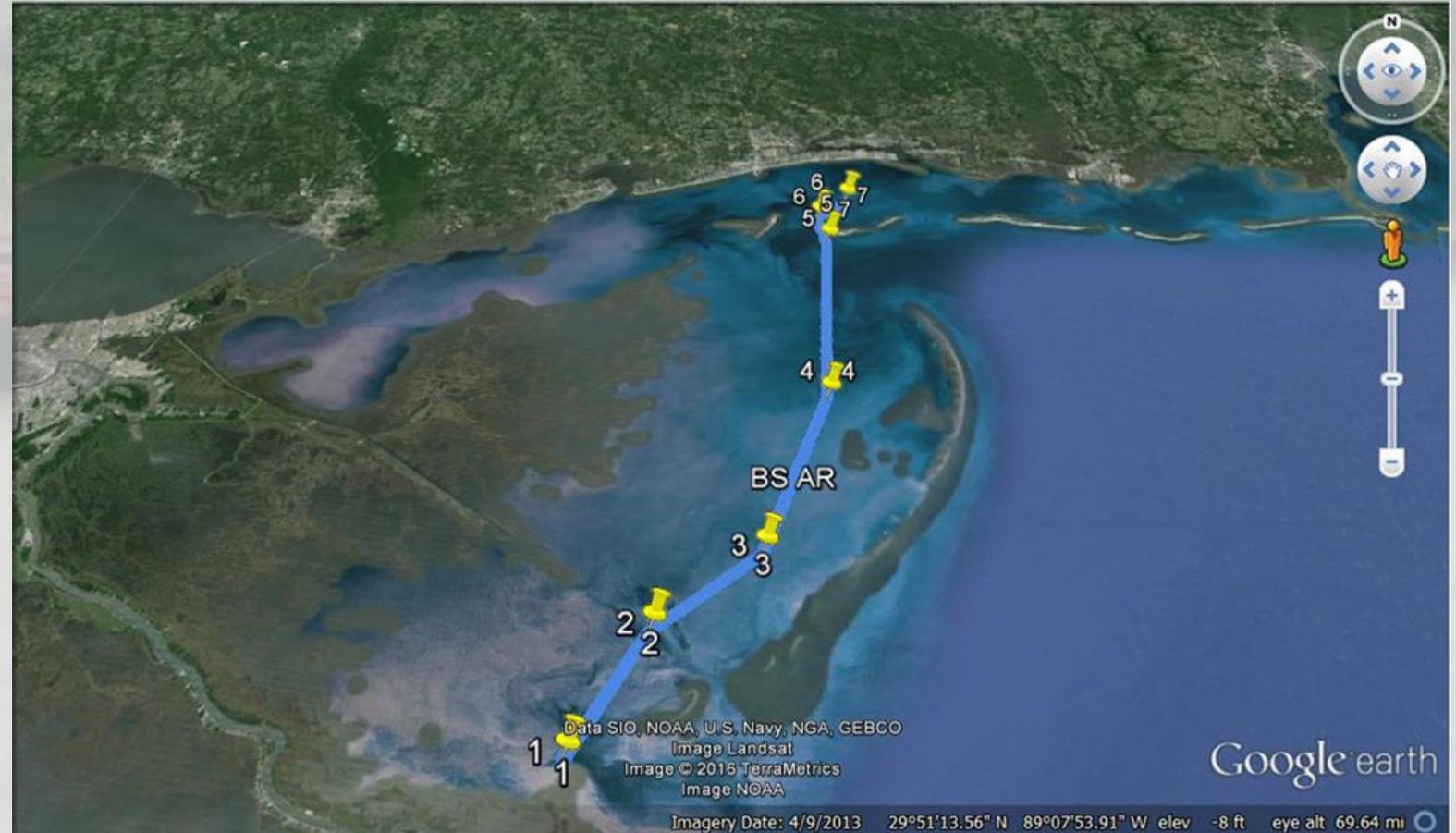
- Will state push to restore?
- Will other ports in state adopt faster?
- Costs of Infrastructure replacement

Pilots

- Changing Statuary authority

Inner Harbor Navigational Canal Lock Closure

- 120 Day closure
- Placing Atons, etc. to managing the diversion
- Intragency-navigation community responses



Are We Prepared for the future?



Without Planning This Would Have Been a Mess

1973 Flood vs Today – Body of Knowledge

1980 LSU Study

- Examined water supply costs
- Economic losses were replacement costs
 - highway and rail infrastructure
 - Natural Gas
 - Flood damage losses

Today

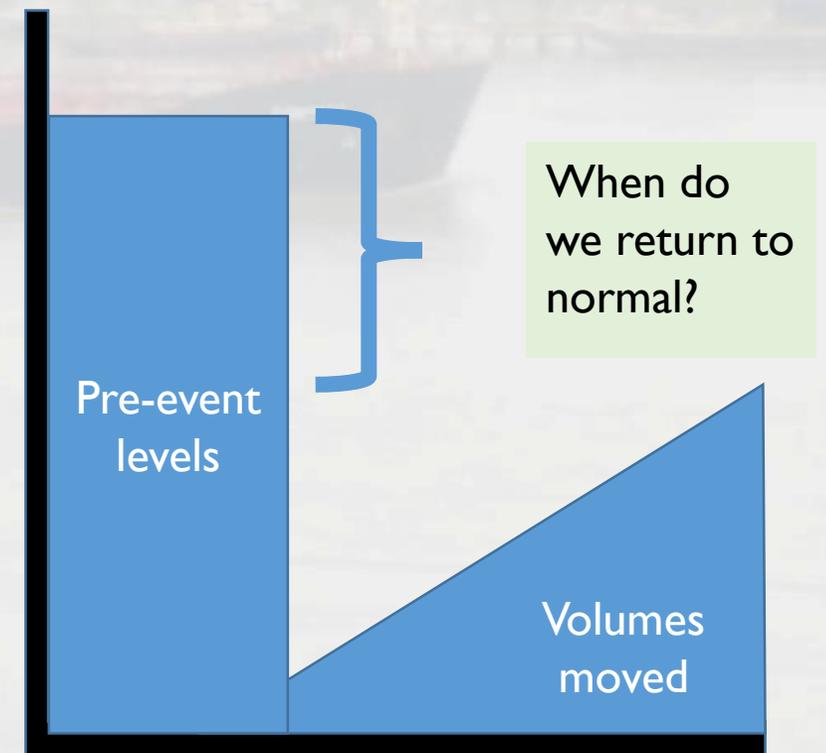
- Katrina
 - Timelines for emergency response
 - ATONS, Inspections, etc.
- Regional navigation projects
- Other Mississippi River Studies
 - Pinnacles
 - M55, Miss Mayors.
- Panama Canal Studies
- Other Navigation Studies

Future Direction

- These are only a few options for
 - LMR Avulsion
 - Interface between commercial activities and coastal restoration.
- A number of direct issues and externalities must be considered.
- Benefit-Cost Analysis would provide useful information in evaluating options.
 - Not simply project analysis
 - Should include positive and negative externalities – both commercial and coastal restoration needs/impacts → Ecosystem Services – Evaluation of “Bundles”
 - Would provide useful insights for long-term solutions
 - How should/would decision makers prioritize options?

What Answers Do Decision Makers Need?

- Who are the decision makers? Who are the experts?
- What are the economic/Benefit-Cost approaches to use for this type of study?
- Timing of responses depends upon belief in offered solutions



Critical Factors to Consider

- Lower Louisiana Industrial/Drinking Water Supply
- Infrastructure on Atchafalaya – U.S. 190 and I-10 Bridges
- Moving People to Jobs
- Transition of Infrastructure:
 - Would a System of Locks and Dams be needed on LMR to maintain a viable transport system?
 - What preparations would be needed to prepare for
 - Option I – Shift in Commerce from LMR to Atchafalaya;
 - Option II – Maintaining current infrastructure on LMR with majority of water avulsed to the Atchafalaya; and
 - Option III – Providing temporary options to maintain commerce while measures are taken to rebuild an improved Old River Structure.
 - Would each of these responses benefit from prior planning?
- Don't forget freight will move somewhere...



Discussion

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